OIPE IAP13 DEC 14 2005 PATENT & TRADEMARK OFFICE

VERIFICATION OF TRANSLATION

I, Masao Matsumoto

of 7th/F., M&E Bldg. Ikebukuro, 36-10, Nishi-Ikebukuro 2-Chome, Toshima-ku, Tokyo, Japan

declare as follows:

1. That I am well acquainted with both the English and Japanese languages, and

2. That the attached document is a true and correct translation made by me to the best of my knowledge and belief of:-

   The specification accompanying the Application No. 2000-117975 for a patent made in Japan

   filed on April 19, 2000.

November 22, 2005

Masao Matsumoto

PATENT OFFICE

JAPANESE GOVERNMENT

This is to certify that the annexed is a true copy of the following application as filed with this Office.

Dated of Application : April 19, 2000

Application Number : Patent Application No. 2000-117975

Applicant(s) : NEC Corporation

February 9, 2001

Commissioner, Kouzo OIKAWA
Patent Office

Certificate No.2001-3005124

[THE NAME OF DOCUMENT] PATENT APPLICATION

[REFERENCE NUMBER] 62699068

[FILING DATE] April 19, 2000

[DESTINATION] DIRECTOR-GENERAL PATENT OFFICE

[IPC CLASSIFICATION] G06F 15/21

[INVENTOR]

[ADDRESS] c/o NEC Corporation, 7-1, Shiba 5-chome, Minato-ku, Tokyo, Japan

[NAME] Toshio YAGIHASHI

[INVENTOR]

[ADDRESS] c/o NEC Corporation, 7-1, Shiba 5-chome, Minato-ku, Tokyo, Japan

[NAME] Shunichi SATOU

[APPLICANT]

[DISCRIMINATION NUMBER] 000004237

[NAME] NEC Corporation

[AGENT]

[DISCRIMINATION NUMBER] 100105511

[PATENT ATTORNEY]

[NAME] Yasuo SUZUKI

[AGENT]

[DISCRIMINATION NUMBER] 100109771

[PATENT ATTORNEY]

[NAME] Yasunobu USUDA

[OFFICIAL FEE]

[HOW TO PAY] PREPAYMENT

[NUMBER OF PREPAYMENT LEDGER] 055457

[AMOUNT OF PAYMENT] 21000

[THE LIST OF FILING OBJECT]

[THE NAME OF OBJECT] Specification 1

[THE NAME OF OBJECT] Drawing 1

[THE NAME OF OBJECT] Abstract 1

[THE NUMBER OF GENERAL POWER OF ATTORNEY]
9711687

[NEEDS OF PROOF] NEED

[THE NAME OF DOCUMENT] SPECIFICATION

[TITLE OF THE INVENTION] NETWORK-BASED DESIGN SERVICE SYSTEM AND ITS DESIGN

[CLAIM]

[CLAIM 1] A network-based design service system, comprising:

design database server which stores a design database containing information on parts/vendors, information on sample circuits, and information on anti-noise circuit and other design know-how that are registered by a parts vendor in advance via a network; designer terminal for a designer to search said design database on a WWW site, determine design conditions autonomously, and conduct the design of a device; and account terminal which pays a royalty for utilizing the design database from the bank account of the designer to the bank account of the parts vendor upon utilization of said design database, and pays an employment fee from the bank account of the parts vendor to the bank account of the designer upon employment of a part by said designer.

[CLAIM 2] The network-based design service system as set forth in claim 1, further comprises means for notifying a problem if a problem is found in a sample circuit, etc., during the design process for a device to other designer terminals being used by other designers working on the devices related to the device

with said problem.

[CLAIM 3] The network-based design service system as set forth in claim 1, further comprises means for the designer to conduct circuit design for a device, and determine parts to employ autonomously through price simulation for achieving the target price of the device and noise simulation for achieving the required noise proof performance.

[CLAIM 4] A network-based design method, comprising the steps of:

a step by a parts vendor of registering on a design database server various kinds of information, including information on parts/vendors, information on sample circuits, and information on anti-noise circuit and other design know-how, in advance via a network; a step of searching said design database on a WWW site, determining design conditions autonomously, and conducting the design of a device by a designer; and a step of paying a royalty for utilizing the design database from the bank account of the designer to the bank account of the parts vendor upon utilization of said design database, and paying an employment fee from the bank account of the parts vendor to the bank account of the designer upon employment of a part by said designer.

[CLAIM 5] The network-based design method as set forth in claim 4, comprising the step of notifying a

problem if a problem is found in a sample circuit, etc., during the design process for a device to other designer terminals being used by other designers working on the devices related to the device with said problem.

[CLAIM 6] The network-based design method as set forth in claim 4, comprising the step of the designer conducting circuit design for a device, and determine parts to employ autonomously through price simulation for achieving the target price of the device and noise simulation for achieving the required noise proof performance.

[DETAILED DESCRIPTION OF THE INVENTION]

[0001]

[FIELD OF THE INVENTION]

The present invention relates to a network-based design service system and its design method. In particular, the present invention relates to a network-based design service system and its design method for use in the design of main board, for example, circuit design for personal computer and the like.

[0002]

[PRIOR ART]

In conventional design services, a designer negotiates offline with parts manufacturers and other organizations throughout design process in order to realize a required design of a circuit or other part. For this, the designer has to make various other

arrangements with parts manufacturers, etc., every time necessity arises to decide details of individual design items.

[0003]

For example, a designer responsible for the design of a main board negotiates with parts vendors as to individual parts to be used for the planned main board, e.g., CPU, memory, I/O control, and display control, to select the most appropriate products in terms of performance, price, and other factors. The designer also decides the most appropriate anti-noise circuits, etc., for the respective parts, by taking into account the recommendation of parts manufacturers for achieving the required noise proof performance against static noise, reflective noise, cross talk noise, etc. The designer then combines the selected parts, and designs a main board offline, using a sample circuit as a basis.

[0004]

[PROBLEMS TO BE SOLVED BY THE INVENTION]

These conventional design service systems have problems of inefficiency and inconvenience because they force the designer to design a circuit, etc., by negotiating offline with parts manufacturers and other organizations concerning individual design items, making design tasks very onerous and time-consuming.

[0005]

(OBJECT OF THE INVENTION)

One object of the present invention is to provide a design service system and its design method for real-time design, thereby contributing to a considerable improvement in design efficiency.

[0006]

Another object of the present invention is to provide a system that allows a designer to access a design database online and make payments over a network for the utilization of the design database.

[0007]

[MEANS TO SOLVE THE PROBLEM]

A network-based design service system according to the present invention comprises design database server which stores a design database containing information on parts/vendors, information on sample circuits, and information on anti-noise circuit and other design know-how that are registered by a parts vendor in advance via a network, designer terminal for a designer to search said design database on a WWW site, determine design conditions autonomously, and conduct the design of a device, and account terminal which pays a royalty for utilizing the design database from the bank account of the designer to the bank account of the parts vendor upon utilization of said design database, and pays an employment fee from the bank account of the parts vendor to the bank account of the designer upon

employment of a part by said designer.

[0008]

In the preferred construction, the network-based design service system further comprises means for notifying a problem if a problem is found in a sample circuit, etc., during the design process for a device to other designer terminals being used by other designers working on the devices related to the device with said problem. Also, the network-based design service system further comprises means for the designer to conduct circuit design for a device, and determine parts to employ autonomously through price simulation for achieving the target price of the device and noise simulation for achieving the required noise proof performance.

[0009]

A network-based design method according to the present invention comprising the steps of a step by a parts vendor of registering on a design database server various kinds of information, including information on parts/vendors, information on sample circuits, and information on anti-noise circuit and other design know-how, in advance via a network, a step of searching said design database on a WWW site, determining design conditions autonomously, and conducting the design of a device by a designer, and a step of paying a royalty for utilizing the design database from the bank account of

the designer to the bank account of the parts vendor upon utilization of said design database, and paying an employment fee from the bank account of the parts vendor to the bank account of the designer upon employment of a part by said designer.

[0010]

In the preferred construction, the network-based design method comprises the step of notifying a problem if a problem is found in a sample circuit, etc., during the design process for a device to other designer terminals being used by other designers working on the devices related to the device with said problem. In another preferred construction, the network-based design method comprises the step of the designer conducting circuit design for a device, and determine parts to employ autonomously through price simulation for achieving the target price of the device and noise simulation for achieving the required noise proof performance.

[0011]

The autonomous determination of parts to employ means an autonomous part extracting function for selecting another part with a different price or another preferred part to a higher accuracy specification if the target values are not achieved as results of a simulating function for simulating a calculation of the prices of all the parts used in a designed circuit, a

noise simulating function for simulating various kinds of noise, for example, reflective noise in the designed circuit and cross talk between circuit wiring patterns.

[0012]

Specifically, a network-based design method according to the present invention comprising the steps of a step by a parts vendor or an other company/division of registering on a design database server parts/vendors, sample circuits, and anti-noise circuit and other design know-how, in advance via a network, a step of selecting component parts through an interactive interface by performing price simulation for achieving the target price of the device in case of conducting of the design of a device by the designer on a WWW site, a step of determining conditions for anti-noise circuit of parts to employ autonomously, and ensuring that the anti-noise circuit is displayed using a color that is different from the color used for the base circuit, e.g., the sample circuit, but is based on the color of the sample circuit, thereby facilitating the identification of the anti-noise circuit.

[0013]

[OPERATION]

In the present invention, as described briefly above, a parts vendor registers on a design DB server various kinds of information, including the names of parts/vendor items, sample circuits, and design know-how,

e.g., anti-noise circuits, in advance through a parts vendor terminal via a network; a designer can then perform circuit design for a device on a WWW site through a designer terminal. Upon utilization of the design database, an account terminal pays a royalty for the utilization of the design database from the bank account of the designer to the bank account of the parts vendor. Upon employment of a part, the account terminal pays an employment fee for the selected part from the bank account of the parts vendor to the bank account of the designer. The present invention allows the preferred part to be determined autonomously, thereby making it possible for a designer to perform real-time design and consequently contributing to a considerable improvement in design efficiency.

[0014]

The present invention eliminates the inconvenience on the part of a designer addressing this kind of design, which arises from being forced to negotiate with a parts manufacturer offline as occasion demands. The present invention also provides a significant improvement in design efficiency by allowing a designer to conduct real-time design, based on the design database featuring unified and comprehensive coverage of design know-how. As compensation for these benefits enjoyed by a designer, a royalty for the utilization of the design database can be paid from the

bank account of the designer to the bank account of the parts vendor after the design database has been utilized. After a part has been employed, on the other hand, an employment fee for the selected part can be paid from the bank account of the parts vendor to the bank account of the designer.

[0015]

[THE EMBODIED CONFIGURATION OF THE INVENTION] (DESCRIPTION OF THE COMPOSITION)

Fig. 1 is a block diagram showing an embodied configuration of a network-based design service system and its design method according to the present invention.

[0016]

A system according to the present embodied configuration comprises a parts vendor terminal (12) for supplying parts of a device; an other company/division terminal (13); a database (141) of parts and vendors registered by a parts vendor via a network (16) (part/vendor DB); a database (142) of sample circuits (sample circuit DB); a database (143) of anti-noise circuit and other design know-how (anti-noise circuit and other design know-how DB); a design database server (design DB server) (14) for storing a design database (design DB) consisting of a database (144) of past failure cases (past failure case DB) and other information; one or more designer terminals (11) for a designer to design a device on a WWW site using said

design DB as a basis; and an account terminal (15) for paying a royalty for utilizing said design DB from a designer bank account (151) to parts vendor bank account (152) upon utilization of said design DB by the designer, and pays an employment fee from the parts vendor bank account (152) to the designer bank account (151) upon employment of a part.

[0017]

Fig. 2 is a block diagram showing a sample configuration of designer terminal (11), parts vendor terminal (12), and other company/division terminal (13). This configuration comprises an inputting means (212), such as a keyboard (KB); a CPU (211), such as a microprocessor; a displaying part (214), such as an LCD display; a storing means (213) for storing data; and a communication I/F means (215) for connecting to the Internet or other network.

[0018]

The design DB server (14) has a function for accepting registrations of information for inclusion in the design DB through the parts vendor terminal (12) and the other company/division terminal (13), and the function of providing the information to the designer terminal (11).

[0019]

The designer terminal (11) has a function for extracting, selecting and displaying circuit parts, or a

sample circuit that is a combination thereof, for a certain device design; a simulating function for simulating a calculation of the prices of all the parts used in a designed circuit; a noise simulating function for simulating various kinds of noise, for example, reflective noise in the designed circuit and cross talk between circuit wiring patterns; and an autonomous part extracting function for selecting another part with a different price or another preferred part to a higher accuracy specification if said two simulations show that the target values are not achieved. In addition, the designer terminal (11) has a notifying function for notifying a problem, if one is found in a sample circuit, etc., through said simulations during the design process for a device, to other designer terminals being used by other designers working on the devices related to the device with such problem, for example, a circuit board to be connected with the device with such problem. Either the parts vendor terminal (12) or the other company/division terminal (13) can also be configured to include said function.

[0020]

Fig. 3 is a diagram showing a sample configuration of design DB. The design DB stores a part/vendor DB, a sample circuit DB, an anti-noise circuit and other design know-how DB, past failure cases, and other information.

[0021]

Fig. 4 is a diagram showing an example of anti-noise measure for main board to be stored in the design DB. In this diagram, the anti-noise measure connected to each circuit part is shown as a concrete circuit means.

[0022]

(DESCRIPTION OF THE OPERATION)

Fig. 5 is a flow chart describing the operation of the present embodied configuration. Based on this flow chart, and also with reference to Figs. 3 and 4, the system of the present embodied configuration will be described in detail below.

[0023]

First, the parts vendor registers its design data DB on the design DB server (14) (s1). This means that the parts vendor registers a design DB, consisting of a part/vendor DB (141), a sample DB (142), an anti-noise circuit and other design know-how DB (143), a past failure case DB (144), and other information, through the inputting means (212), e.g., keyboard (KB), of the parts vendor terminal (12) on the design DB server (14).

[0024]

As shown in the sample configuration of design DB of Fig. 3, the part/vendor DB in the design DB stores a list of parts used in the main board, e.g., CPU, memory, and I/O control chip, and the respective specifications and other information, including vendor name, vendor

price, and performance/size.

[0025]

The sample circuit DB in the design DB stores the circuits of main boards for other devices, the circuits of existing designs, etc. The anti-noise circuit and other design know-how DB stores design know-how addressing static noise, radial noise, power source noise, cross talk between circuit wiring patterns, and other noise-related problems. The past failure case DB in the design DB stores various failure cases experienced in the past.

[0026]

In the following design step, the designer references and extracts from the design DB server (14) information concerning parts vendors and sample circuits for the device to be designed, using the designer terminal (11). The designer then designs a draft circuit drawing for the main board on a WWW site displayed on the designer terminal (11) (s2). Following this, a simulation is performed to calculate the total price of all the parts in the main board circuit above (s3). The result of this simulation is then checked to see whether it meets the initial target price of the design (s4). If not, sample circuit and other parts are re-selected.

[0027]

If the initial target price of the design is met, a noise proof simulation is performed to determine

reflective noise, cross talk between circuit wiring patters, and other condition within the main board circuit (s5). If the result of this simulation does not meet the requirement of noise proof performance, an anti-noise circuit or other measure is added, modified, or corrected.

[0028]

If these two simulations show that the target values are achieved, payment process is conducted to pay a royalty for utilizing said design DB from a designer bank account (151) to parts vendor bank account (152) upon utilization of said design DB by the designer (s6).

[0029]

The steps described above can achieve a significant improvement in design efficiency by having a parts vendor register on a design DB server various kinds of information, including the names of parts/vendor items, sample circuits, and design know-how, e.g., anti-noise circuits, in advance through a parts vendor terminal via a network, and also having the preferred parts be selected autonomously while a designer is performing circuit design for a device on a WWW site.

[0030]

According to the present invention, it is possible to achieve a significant improvement in design efficiency because a designer can design on a real-time

basis, based on a design database featuring unified and comprehensive coverage of design know-how. By this, the present invention can eliminate the inconvenience on the part of a designer addressing this kind of design, which arises from being forced to negotiate with a parts manufacturer offline to make arrangements concerning individual design items as occasion demands.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[Fig. 1] Fig. 1 is a block diagram showing an embodied configuration of a network-based design service system and its design method according to the present invention.

[Fig. 2] Fig. 2 is a block diagram showing a sample configuration of designer terminal (11), parts vendor terminal (12), and other company/division terminal (13) according to the present embodied configuration.

[Fig. 3] Fig. 3 is a diagram showing a sample configuration of design DB according to the present embodied configuration.

[Fig. 4] Fig. 4 is a diagram showing an example of anti-noise measure for main board.

[Fig. 5] Fig. 5 is a flow chart describing the operation of the present embodied configuration.

[THE DESCRIPTION OF THE NUMERALS]

11 designer terminal

12 parts vendor terminal

13 other company/division terminal

14 design database server (design DB server)

15 account terminal

211 CPU (microprocessor)

212 inputting means

213 storing means

214 displaying part

215 communication I/F means (communication interface means)

[THE NAME OF DOCUMENT] ABSTRACT

[ABSTRACT]

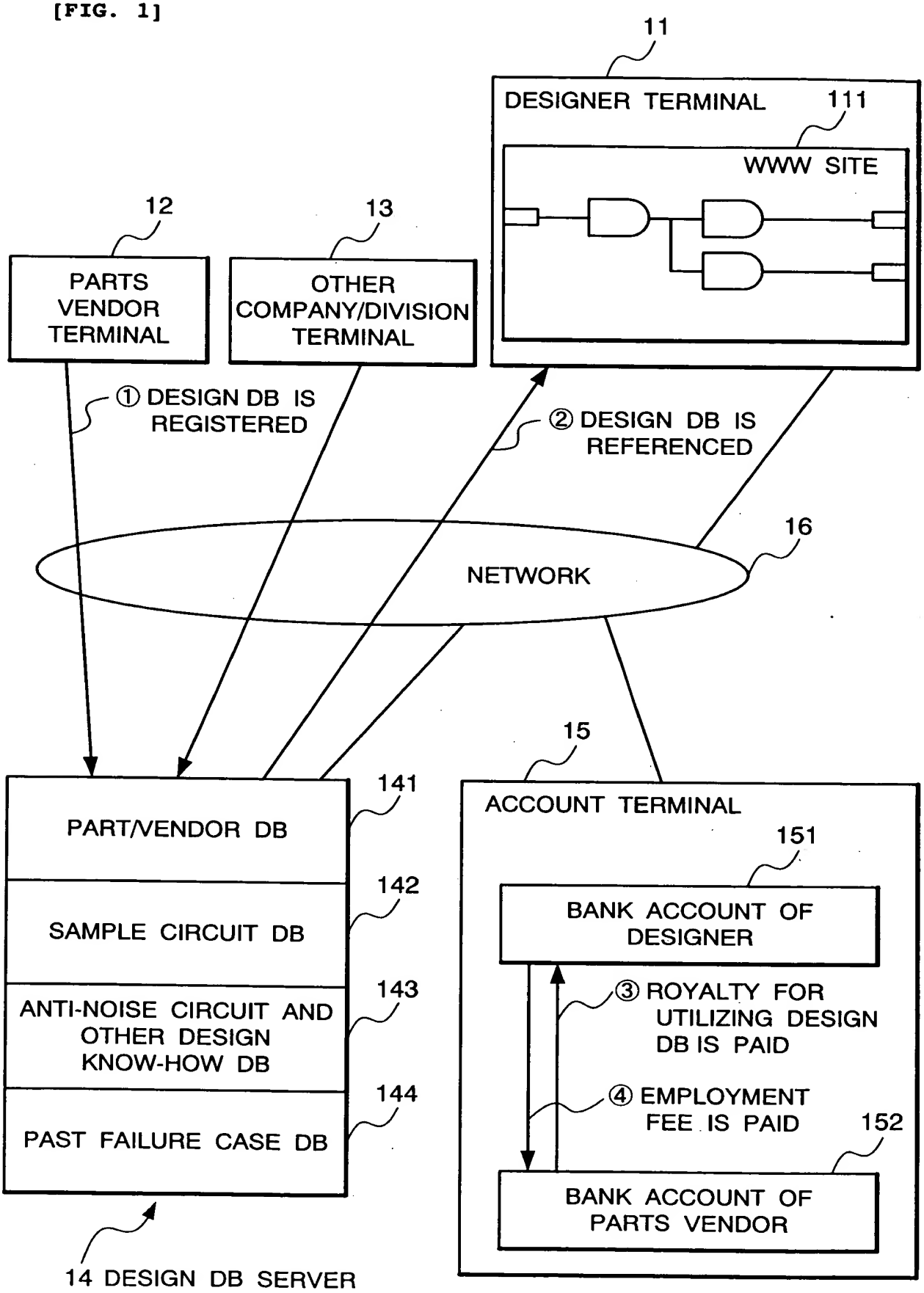
[OBJECT] The present invention provides a design service system and its design method for real-time design, thereby contributing to a considerable improvement in design efficiency.

[CONSTITUTION] In the network-based design service system of the present invention, a parts vendor registers on a design DB server various kinds of information, including the names of parts/vendor items, sample circuits, and design know-how, e.g., anti-noise circuits, in advance through a parts vendor terminal 12 via a network 16, a designer performs circuit design for a device on a WWW site through a designer terminal 11, and an account terminal 15 pays a royalty for the utilization of the design database from the bank account of the designer to the bank account of the parts vendor upon utilization of the design database, and pays an employment fee from the bank account of the parts vendor to the bank account of the designer upon employment of a part.

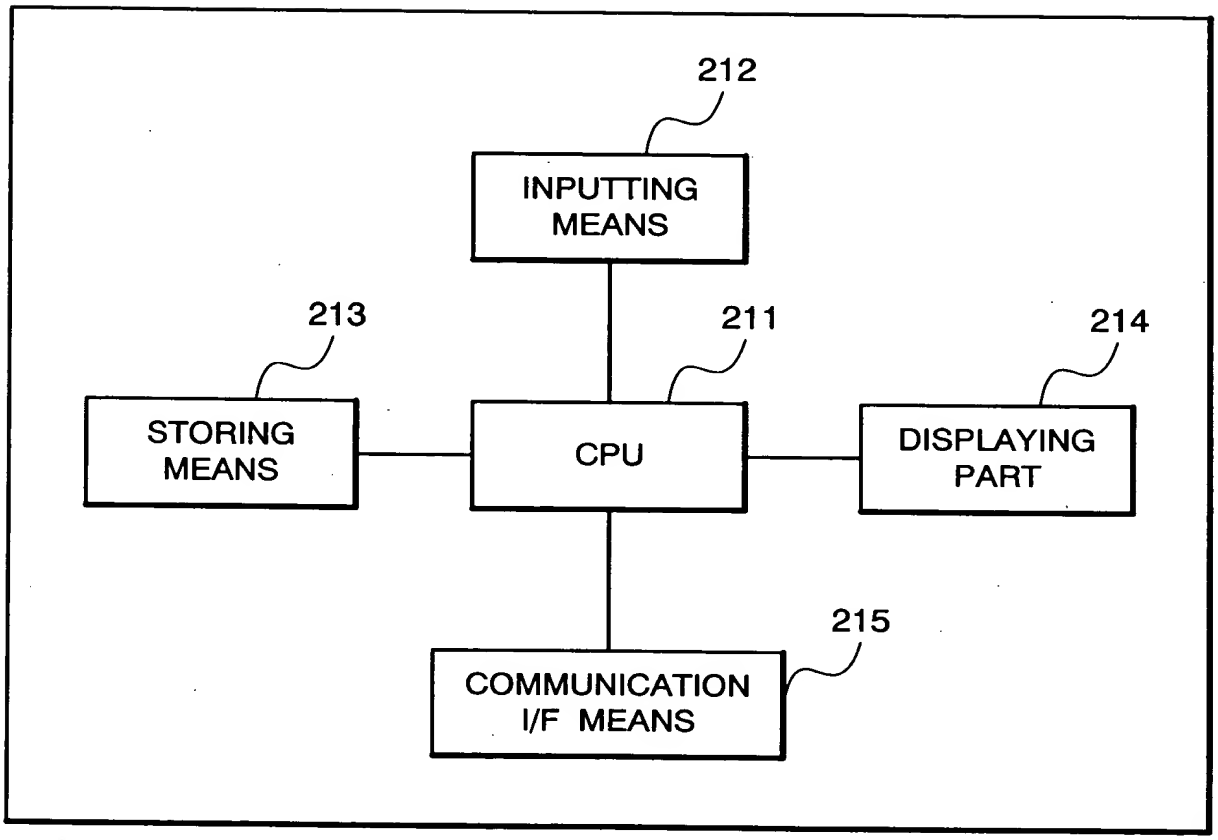
[SELECTED DRAWING] Fig. 1

[]THE NAME OF DOCUMENT] DRAWINGS

[FIG. 1]



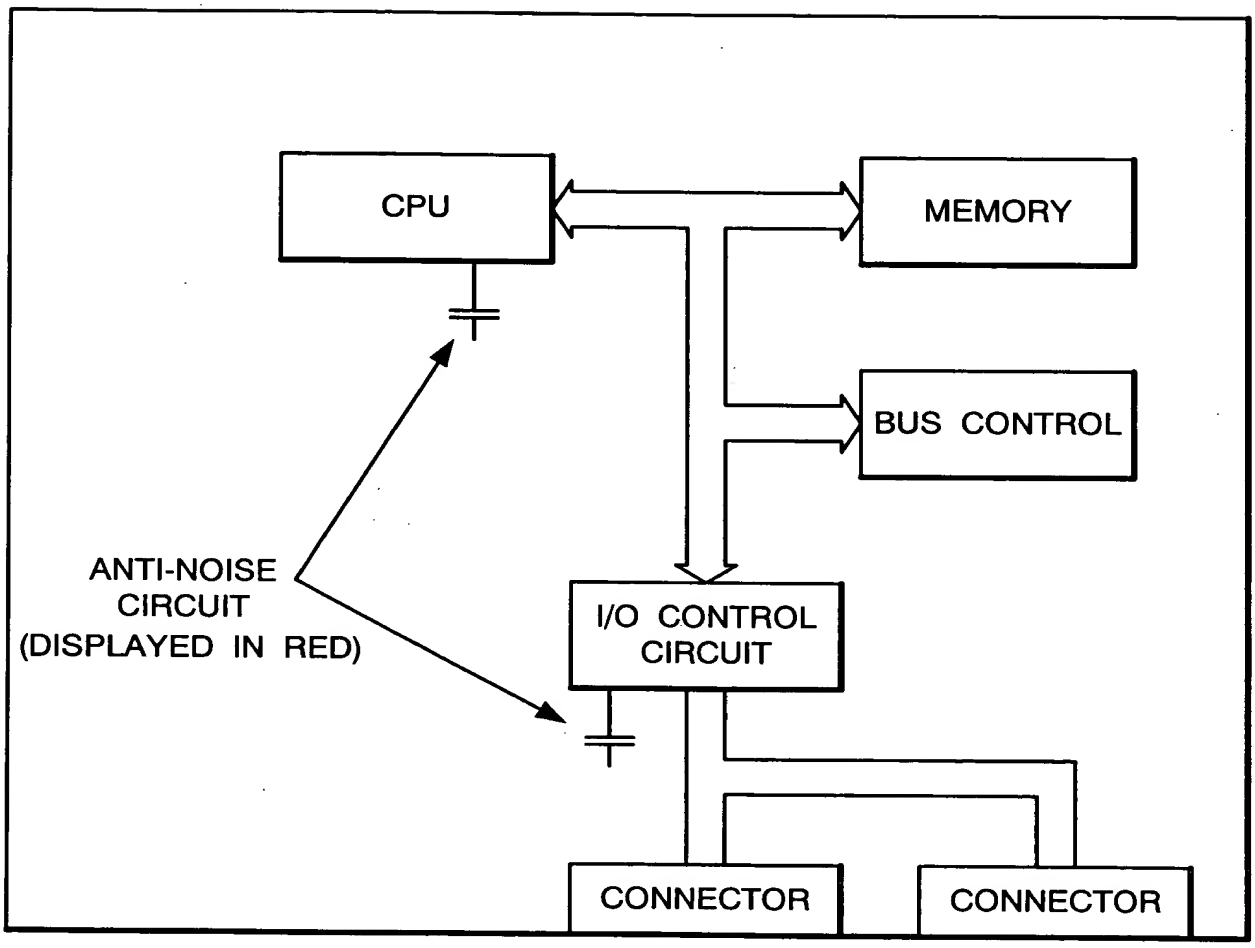
[FIG. 2]


212
INPUTTING MEANS
213
211
214
STORING MEANS
CPU
DISPLAYING PART
215
COMMUNICATION I/F MEANS

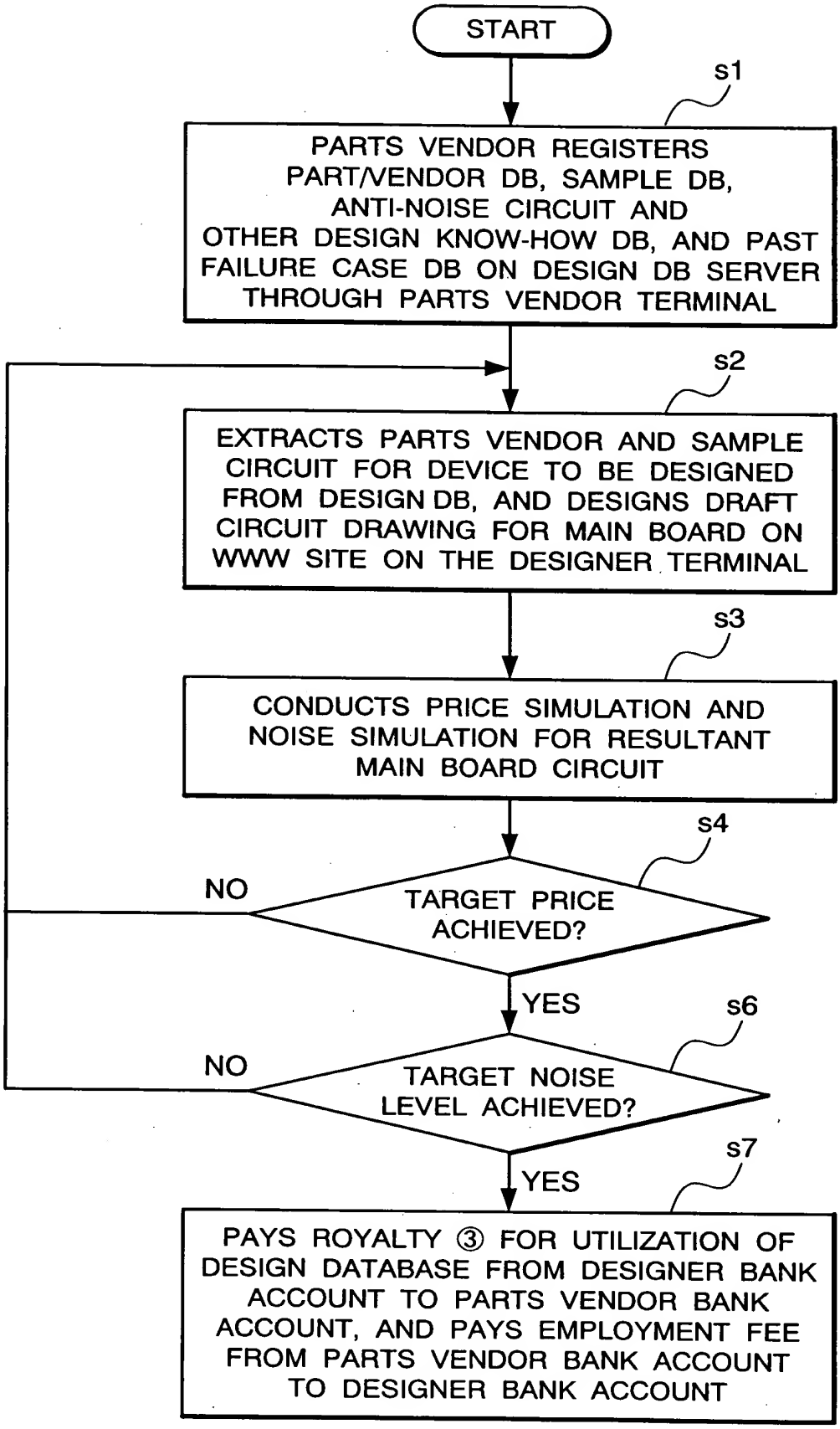
[FIG. 3]

<table>
<tr><td rowspan="4">PART/VENDOR DB, etc.</td><td>PART</td><td>VENDOR</td><td>PRICE</td><td>SPECIFICATION</td></tr>
<tr><td>CPU</td><td>CPU XX</td><td>CPU YY</td><td>CPU ZZ</td></tr>
<tr><td>MEMORY</td><td>MEMORY XX</td><td>MEMORY YY</td><td>MEMORY ZZ</td></tr>
<tr><td>.
.
.</td><td>.
.
.</td><td>.
.
.</td><td>.
.
.</td></tr>
<tr><td colspan="5">SAMPLE CIRCUIT DB
(AROUND CPU , AROUND MEMORY , AROUND I/O , etc.)</td></tr>
<tr><td colspan="5">ANTI-NOISE CIRCUIT AND OTHER DESIGN KNOW-HOW DB
(MEASURES AGAINST STATIC NOISE ,
REFLECTIVE NOISE , CROSS TALKS NOISE , etc.)</td></tr>
<tr><td colspan="5">PAST FAILURE CASE DB</td></tr>
</table>

[FIG. 4]


CPU
MEMORY
BUS CONTROL
ANTI-NOISE
CIRCUIT
(DISPLAYED IN RED)
I/O CONTROL
CIRCUIT
CONNECTOR
CONNECTOR

[FIG. 5]


START
s1
PARTS VENDOR REGISTERS PART/VENDOR DB, SAMPLE DB, ANTI-NOISE CIRCUIT AND OTHER DESIGN KNOW-HOW DB, AND PAST FAILURE CASE DB ON DESIGN DB SERVER THROUGH PARTS VENDOR TERMINAL
s2
EXTRACTS PARTS VENDOR AND SAMPLE CIRCUIT FOR DEVICE TO BE DESIGNED FROM DESIGN DB, AND DESIGNS DRAFT CIRCUIT DRAWING FOR MAIN BOARD ON WWW SITE ON THE DESIGNER TERMINAL
s3
CONDUCTS PRICE SIMULATION AND NOISE SIMULATION FOR RESULTANT MAIN BOARD CIRCUIT
s4
TARGET PRICE ACHIEVED?
NO
YES
s6
TARGET NOISE LEVEL ACHIEVED?
NO
YES
s7
PAYS ROYALTY ③ FOR UTILIZATION OF DESIGN DATABASE FROM DESIGNER BANK ACCOUNT TO PARTS VENDOR BANK ACCOUNT, AND PAYS EMPLOYMENT FEE FROM PARTS VENDOR BANK ACCOUNT TO DESIGNER BANK ACCOUNT